

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

_____)	
In the Matter of)	
)	
Service Rules for the 698-746, 747-762 and)	WT Docket No. 06-150
777-792 MHz Bands)	
)	
Implementing a Nationwide, Broadband)	
Interoperable Public Safety Network in the)	PS Docket No. 06-229
700 MHz Band)	
_____)	

REPLY COMMENTS OF SPACE DATA CORPORATION

Gerald M. Knoblach
Chairman and Chief Executive Officer
460 South Benson Lane
Suite 11-12
Chandler, AZ 85226
Ph: 480-403-0020

July 7, 2008

TABLE OF CONTENTS

	Page
I. INTRODUCTION AND SUMMARY	2
II. AN URBAN/RURAL LICENSING APPROACH WOULD PRODUCE BROADER COVERAGE AND ADDITIONAL COST AND OPERATIONAL EFFICIENCIES.....	3
A. An Urban/Rural Licensing Approach Recognizes The Unique Economic And Strategic Differences Between Urban And Rural Markets	3
B. The Commission's D Block Performance Requirements Should Accurately Measure Build Out And Speed Coverage To Rural Areas	4
C. The Proposed Nationwide Rural License Is Economically Viable For A Standalone Operator.....	8
III. WIDE AREA COVERAGE TECHNOLOGIES HAVE SUFFICIENT CAPABILITY TO PROVIDE SERVICES IN RURAL AREAS.....	9
IV. NEAR SPACE WIDE AREA TECHNOLOGIES ADDRESS SEVERAL ISSUES RAISED IN BY COMMENTERS.....	10
A. Rapid Deployment Enabled By Near Space Technologies Can Add Early Revenue To A Financial Model To Improve Its Financial Performance	10
B. Near Space Technologies Can Be Deployed Rapidly To Provide Coverage In Remote Areas Or Respond To A Surge In Capacity Demands	11
C. Near Space Technologies Avoid Additional Costs Associated With New Multi-Band Equipment.....	12
V. SPACE DATA SUPPORTS OFFERING BIDDING CREDITS TO STIMULATE PARTICIPATION IN THE D BLOCK AUCTION AND PROMOTE CONSTRUCTION OF THE SHARED NETWORK	13
VI. CONCLUSION	14

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

_____)	
In the Matter of)	
)	
Service Rules for the 698-746, 747-762 and)	WT Docket No. 06-150
777-792 MHz Bands)	
)	
Implementing a Nationwide, Broadband)	
Interoperable Public Safety Network in the)	PS Docket No. 06-229
700 MHz Band)	
_____)	

REPLY COMMENTS OF SPACE DATA CORPORATION

Space Data Corporation (“Space Data”) replies to comments filed in response to the Second Further Notice of Proposed Rulemaking in the above-captioned proceeding (“*700 MHz Second NPRM*”) regarding the re-auction of the 700 MHz D Block and the establishment of a shared nationwide, interoperable broadband public safety network (the “Shared Network”).¹ The record overwhelmingly demonstrates that the use of wide area technologies can help solve the leading economic challenges in constructing and operating the Shared Network without compromising the needs of public safety or commercial users. To reap the full benefits of the Shared Network, however, the Commission must ensure that the D Block licensee(s) and broadband public safety licensee have maximum flexibility to use innovative and novel wide area technologies to construct and operate the Shared Network. To speed build out and ensure

¹ See *Service Rules for the 698-746, 747-762 and 777-792 MHz Bands Implementing a Nationwide, Broadband Interoperable Public Safety Network in the 700 MHz Band*, Second Further Notice of Proposed Rulemaking, WT Docket No. 06-150, PS Docket No. 06-229 (rel. May 14, 2008) (“*700 MHz Second NPRM*”).

full coverage of rural markets, Space Data also supports splitting the D Block spectrum into a national rural license and a national urban license.

I. INTRODUCTION AND SUMMARY.

The record in this proceeding demonstrates that many still believe that the proposed public-private Shared Network holds great promise for realizing at last an advanced, nationwide, interoperable public safety network. As Space Data explained in its initial Comments, a hybrid approach that uses both terrestrial and wide area “near space” technologies would ensure the efficient and economic construction of the Shared Network to the benefit of public safety and commercial users. Commenters agree with Space Data that wide area technologies offer a unique opportunity to create viable business plans for the construction and operation of a Shared Network that could reach 100 percent of the population and landmass of the United States.² Accordingly, there is no need to relax the performance requirements that apply to the 700 MHz D Block spectrum.

Furthermore, other commenters agree that allocating the D Block into one “urban” license and one “rural” based upon population could result in greater coverage – particularly to rural areas – and other cost and operational efficiencies. To ensure that public safety and commercial users benefit from a fully constructed Shared Network, the Commission should measure build out of the D Block by the number of U.S. Census Blocks covered by the actual footprint of the licensee’s network. In addition, Space Data provides an economic analysis showing that the rural license in Space Data’s proposed urban/rural licensing approach provides an economically fundable business plan. In response to various concerns expressed by other commenters, Space Data also provides greater detail regarding the capacity and service aspects

² See, e.g., Space Data Comments at 3-12; Mobile Satellite Ventures Subsidiary LLC Comments at 8-12; Satellite Industry Association Comments at 4-5.

of near space technologies that would make the Shared Network more attractive to investors and operators.

New technologies offer the Commission the opportunity to not make a compromise that will be to the detriment of our first responders. As Space Data discussed in its Comments, its near space technology can be used in conjunction with a terrestrial network to target the sparsest 10 percent of the U.S. population that resides in the rural areas of the country, as well as provide some initial service to urban and suburban areas as the terrestrial network is expanded. The Commission should ensure that its rules do not restrict the D Block licensee(s) from taking advantage of such novel, beneficial approaches.

II. AN URBAN/RURAL LICENSING APPROACH WOULD PRODUCE BROADER COVERAGE AND ADDITIONAL COST AND OPERATIONAL EFFICIENCIES.

A. An Urban/Rural Licensing Approach Recognizes The Unique Economic And Strategic Differences Between Urban And Rural Markets.

Space Data agrees with Coverage Co. that assigning two nationwide licenses in the 700 MHz D Block spectrum has numerous benefits.³ As Space Data noted in its Comments, an urban/rural licensing approach would make the spectrum more attractive to both investors and operators by encouraging additional bidders to participate in the D Block auction and promoting broader total coverage and faster build out.⁴ In addition, Space Data agrees with the cross-roaming principles outlined by Coverage Co. The urban and rural license areas, however, should be defined using the latest U.S. Census data for urbanized areas as Space Data proposed in its Comments. U.S. Census data is a more accurate predictor of population density in urban and rural areas than Cellular Market Areas (“CMAs”), counties, or other legacy licensing schemes.

³ See Coverage Co. Comments at 5-7.

⁴ See Space Data Comments at 12-16.

Several commenters express support for assigning one nationwide license in the 700 MHz D Block spectrum, while others suggest dividing the D Block into many regional licenses. The single nationwide license approach, however, previously failed, and creating more than two D Block licenses increases exponentially the complexity and level of coordination needed between the licensees and the public safety broadband licensee. In contrast, an urban/rural licensing approach recognizes the unique economic and strategic differences of urban and rural markets and minimizes the complexity inherent in other licensing schemes.

B. The Commission's D Block Performance Requirements Should Accurately Measure Build Out And Speed Coverage To Rural Areas.

The record demonstrates that the public safety and commercial wireless communities continue to struggle to find a middle ground between the greater network coverage and robustness required by public safety interests and the impact that the associated increased costs would have on private interests' ability to fund and construct the Shared Network. Based upon data previously gathered by the Commission, there appears to be a viable business case for building out digital wireless networks using traditional towers to cover up to 98 percent of the U.S. population, which is located in less than 60 percent of the U.S. landmass.⁵ In fact, each of the A, B, and E spectrum blocks that were auctioned in Auction No. 73 requires the licensees to collectively cover at least 70 percent of the U.S. landmass by the end of the license term, which by any measure equals coverage to more than 99.3 percent of the U.S. population. With the

⁵ See *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, Twelfth Annual Report, 23 FCC Rcd 2241, 2303, Table 10 (2008). Although no carrier has constructed a wireless network that covers more than 95 percent of the population, this likely can be attributed to the fact that no one carrier has held sufficient unencumbered broadband spectrum on a nationwide basis to do so. Thus, it is more appropriate to examine the amount of population that is covered by any one wireless technology – both CDMA and GSM networks cover up to 98 percent of the U.S. population.

additional use of wide area technologies, the D Block licensee(s) can provide economically even greater coverage, up to 100 percent of the U.S. population and landmass.

Unless the Commission accurately measures build out of the D Block, however, public safety and commercial users will not have the benefit of a fully constructed Shared Network, particularly in rural areas.⁶ Space Data suggests that D Block coverage be measured by the number of Census Blocks covered by the actual footprint of the licensee's network. (Exhibit A depicts population and landmass coverage at various levels.) Under Space Data's proposed urban/rural licensing approach, the Shared Network then would cover at least 80 percent of the U.S. landmass compared to 45 percent under a one nationwide license approach.

To accurately forecast the level of proposed coverage for the D Block at various build out levels, in addition to the percentage population or landmass to be covered, the Commission should consider: (1) the "resolution" used to measure the coverage, and (2) the relevant market areas to measure coverage. For example, Figure 1 below shows 95 percent population coverage of the continental United States using five different levels of resolution – CMAs, counties, zip codes, Census Blocks, and a uniform grid of 10-by-10 kilometer squares. For forecasting purposes, a 10-by-10 kilometer square serves as a reasonable proxy for a terrestrial tower's coverage area.⁷ As shown in Figure 1, there is significant variation of the landmass covered if

⁶ For example, the Public Safety Spectrum Trust ("PSST") provided maps in its Comments depicting hypothetical coverage at population percentages at the county-level. *See* PSST Coverage Analysis at 95-101. The PSST maps likely overstate actual coverage because they assume that an entire county has been built out even if the D Block licensee constructs towers that provide broadband coverage to only a portion of the county.

⁷ Space Data believes that a 10-by-10 kilometer resolution represents the most efficient and accurate prediction of coverage for forecasting purposes because the resolution is uniform across the country. Other metrics, such as CMAs or Census Blocks, vary greatly in size and typically are smaller in urban areas and in the Eastern U.S. and larger in rural areas and in the Western U.S. These size differentials would create forecasting distortions.

build out is measured by CMAs (the least precise measurement) and Census Blocks (the most precise measurement).

95 Percent Population Coverage

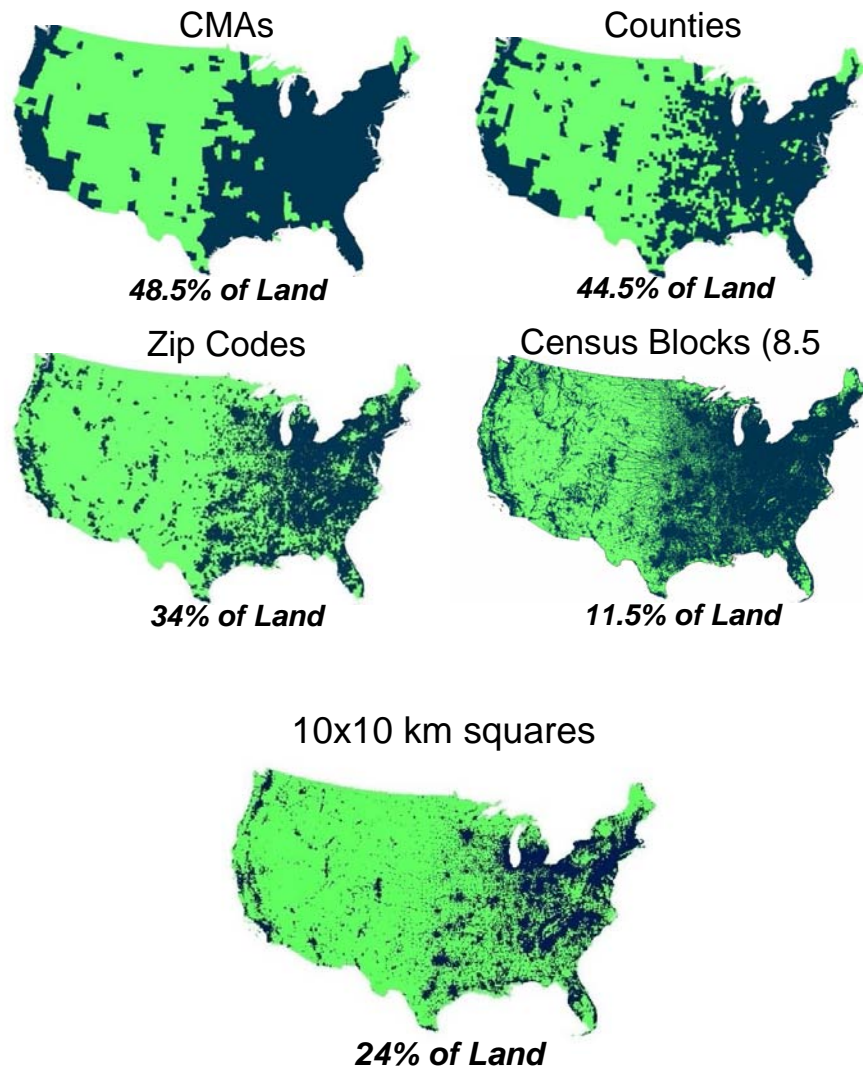


Figure 1: Coverage of 95 percent of the population at different resolution shows wide variation of landmass coverage from 11.5 percent of land to 48.5 percent of land.

With regard to the relevant market areas used to forecast the D Block performance requirements, Figure 2 below shows 70 percent of landmass coverage based on a 10-by-10 kilometer hypothetical tower network for four different market areas: (1) nationwide; (2) the

proposed urban/rural market areas; (3) regional economic area groupings (“REAGs”); and (4) economic areas (“EAs”). As demonstrated in Figure 2, using smaller market areas may distribute coverage more evenly, but also results in less cost effective coverage and less population covered for the same square area of coverage.

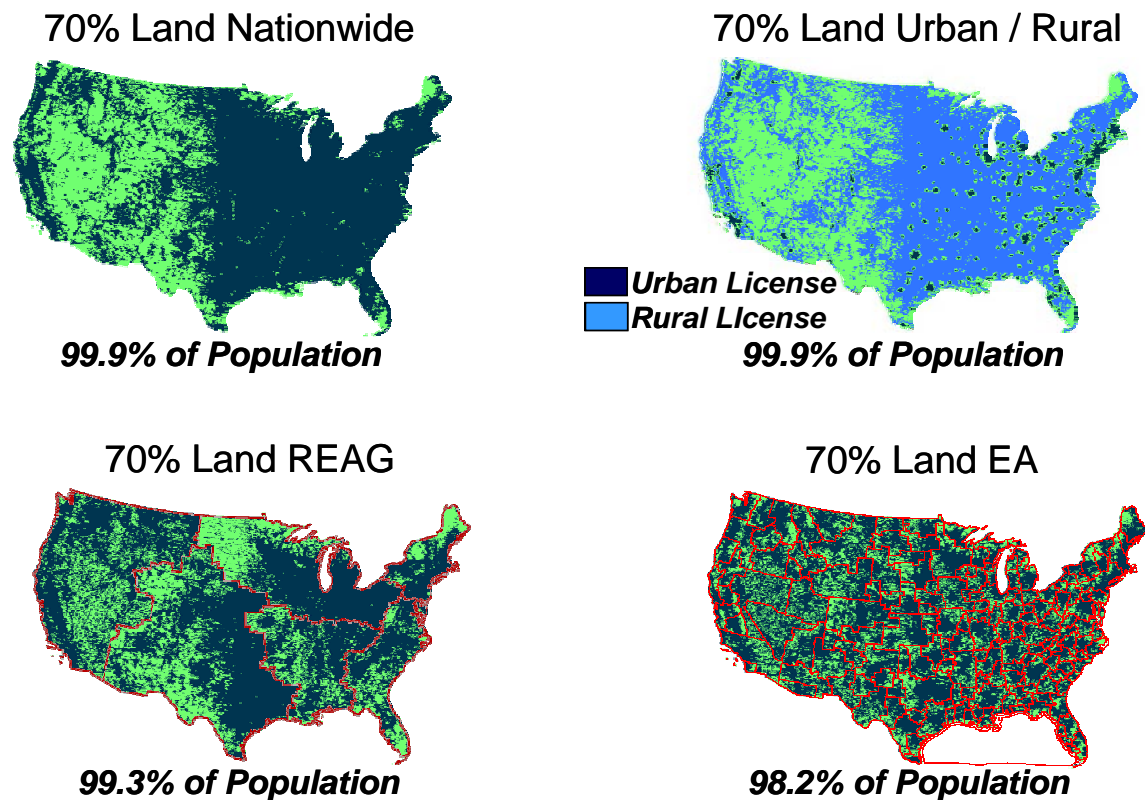


Figure 2: Coverage of 70 percent of U.S. landmass for four different market areas.

As demonstrated above, even a 99.3 percent population build out requirement can be significantly less than anticipated, proving that the Commission should maintain at least the existing D Block performance requirements. The failure to forecast and measure build out of the D Block accurately could result in distorted performance requirements and a partially constructed Shared Network that fails to fully cover rural areas of the United States.

In addition, the Commission should prohibit a D Block licensee from using transmitters constructed in other spectrum blocks to count toward the 700 MHz D Block performance requirements, regardless of whether multi-band equipment would allow a subscriber to use the non-D Block spectrum in the absence of a constructed D Block network. For example, if a D Block licensee also has constructed a network that operates on the 850 MHz spectrum band (or any other non-700 MHz D Block spectrum) and offers multi-band equipment that can operate on both the 850 MHz and 700 MHz D Block spectrum, only the geographic areas covered by a constructed 700 MHz D Block network should count towards the licensee's performance requirements. Otherwise, the D Block licensee could avoid its obligation to construct the Shared Network using the D Block spectrum and warehouse spectrum unnecessarily.

C. The Proposed Nationwide Rural License Is Economically Viable For A Standalone Operator.

The rural license in Space Data's proposed urban/rural licensing approach provides an economically fundable business plan. Specifically, Exhibit B includes a financial model for a tower-only build for the rural licensee, even though the D Block licensee may be able to take advantage of less expensive wide area technologies.⁸ The model assumes that by the four and ten year build out deadlines, the rural licensee would be required to cover 35 and 70 percent, respectively, of the U.S. landmass. In Auction No. 73, the top one-third of the CMAs of the B Block spectrum comprised 75 percent of the U.S. population and collected 95 percent of the total bids for all B Block CMAs. The attached financial model thus conservatively assumes that the cost of the rural license would be 10 percent of the reserve price of D Block license in Auction No. 73, i.e., twice as high as the 5 percent suggested by actual rural proceeds. The model also

⁸ The model is based on a commercially available financial model for a fourth generation wireless network. See WIMAX Strategic Capex Model – Mobile, *available at* <http://www.wimax.com/commerce/catalog/business-tools/capex-business-model-mobile>

uses parameters suggested by the PSST in its Comments (7 percent penetration of the general public; \$63 per month revenue per subscriber in Year 5; 5 gigabytes per month per subscriber in Year 5; and \$420,000 per site (includes new site construction, hardening, and core network with a \$150,000 reduction in early years when sites will mostly be co-located)). Considering that the rural license would cover 75 million pops, which provides the operator with enough scale to purchase user devices and infrastructure at competitive prices, the model results in a positive Net Present Value of \$6 billion using a discount rate of 15 percent as it generates over \$2.5 billion in cash flow annually in each of Year 6 through Year 10. Thus, the rural license by itself is a positive investment opportunity for the financial community to support.

III. WIDE AREA COVERAGE TECHNOLOGIES HAVE SUFFICIENT CAPABILITY TO PROVIDE SERVICES IN RURAL AREAS.

Space Data disagrees with the National Association of Telecommunications Officers and Advisors' suggestion that wide area technologies' capacity might be "overwhelmed when a significant fraction of those users needed to access the system at once."⁹ Wide area "near space" technologies such as Space Data's SkySite® platforms provide adequate capacity in rural areas to meet the demands established by the PSST in its Bidders Information Document ("BID") for the Shared Network, namely 16.5 gigabytes per month for a public safety subscriber and 7 gigabytes per month for a commercial subscriber.

As further explained in Space Data's Comments, near space platforms float at altitudes between 65,000 and 100,000 feet, establishing a wide coverage area.¹⁰ At this range, SkySite platforms can provide high speed links with adequate signal margin from very small antennas that form multiple spot beams per platform. Exhibit C shows the coverage of the continental

⁹ National Association of Telecommunications Officers and Advisors Comments at 18.

¹⁰ See Space Data Comments at 4-6.

U.S. from approximately 355 SkySite platforms that have been outfitted with fourth generation wireless base stations. Each SkySite platform covers an area 100 kilometers in radius (the maximum allowed cell size for some fourth generation technologies).¹¹ Exhibit C also depicts any necessary power or capacity limitations using a SkySite network under Space Data's proposed urban/rural licensing approach.

As Space Data explained in its Comments, because of large cell sizes inherent in wide area technologies, the capacity of an individual SkySite platform is less than the capacity available through a land-based tower. For this reason, however, SkySite platforms are ideal for providing coverage to rural, less populated areas where capacity demand is lower, while a terrestrial system would be used in more urban areas. A nationwide SkySite network could provide primary coverage in rural areas where a terrestrial system has not yet been constructed, as well as some initial service to urban and suburban areas as the terrestrial network is expanded. A nationwide SkySite network also could provide an additional layer of redundancy over terrestrial and satellite networks.

IV. NEAR SPACE WIDE AREA TECHNOLOGIES ADDRESS SEVERAL ISSUES RAISED IN BY COMMENTERS.

A. Rapid Deployment Enabled By Near Space Technologies Can Add Early Revenue To A Financial Model To Improve Its Financial Performance.

Space Data generally supports the cost model that Mobile Satellite Ventures Subsidiary LLC ("MSV") submitted in its Comments demonstrating the cost efficiencies presented by wide

¹¹ "E-UTRA should support the following deployment scenarios in terms of maximum cell range: ... up to 100 km: should not be precluded by the specifications." See 3GPP TR 25.913 'Feasibility Study of Evolved UTRA and UTRAN', Section 7.4. While the difference between the nearest and farthest user is 100 kilometer, the closest user to a SkySite platform is 20 kilometers directly below it. This 20 kilometer offset can be compensated for in the base radio design just as it is often done for an antenna fed with a fiber optic distribution system.

area technologies.¹² In addition to the cost savings discussed by MSV, the potential for early incremental revenues would make the business case for the Shared Network even more attractive to investors. As Space Data has previously explained, the entire continental United States can be quickly covered by only 355 near space platforms (in contrast to more than 30,000 towers). Thus, it is possible to deploy a thin layer of coverage up to a year before a critical mass of tower-based coverage will become available. As explained in Exhibit C, a nationwide SkySite network has a capacity of 15.6 gigabits per second, which equates to more than 5 terabytes per month of capacity. At the Year 1 average monthly usage of 4 gigabytes per month per subscriber at a monthly rate of \$63 as suggested by the PSST, a nationwide SkySite network could serve 1.28 million subscribers for additional revenue of nearly a billion dollars per year.

B. Near Space Technologies Can Be Deployed Rapidly To Provide Coverage In Remote Areas Or Respond To A Surge In Capacity Demands.

The International Municipal Signal Association and International Association of Fire Chiefs, Inc. notes that deployable technologies are important to responding to disasters particularly if the requirement to build out to 99.3 percent of the U.S. population is relaxed.¹³ Space Data's SkySite platforms are used by the U.S. military for just this reason. SkySite platforms can be taken quickly to and deployed over the affected areas. For example, an initial two SkySite platforms can be carried on a commercial aircraft as carry-on luggage. A briefcase-sized version of the ground station for the SkySite platforms also exists. With a bottle of lifting gas to inflate the SkySite's balloon, a wide area SkySite platform network can be active within two hours. Such a response time is significantly shorter than driving or air lifting cellular towers on wheels (often called COWs) to the affected areas.

¹² See MSV Public Safety Network Cost Model Summary at 44-50.

¹³ See International Municipal Signal Association and International Association of Fire Chiefs, Inc. Comments at 12-14.

In addition, there is the potential to deploy in advance SkySite platforms in case of emergencies because a platform can be launched easily with minimal training. The SkySite platforms also are designed to fly through storm clouds and float much higher than large thunderstorms and are thus not affected by adverse weather conditions. In fact, the National Guard in Gulfport, Mississippi is conducting exercises this week with platforms derived from commercial SkySite technology as part of its preparation for the next hurricane emergency. In addition, last summer the National Guard conducted exercises using the system in Hawaii in a drill simulating an earthquake that disabled communications throughout the islands. As described in Exhibit D, the entire chain of Hawaiian islands was covered by one platform launched out of Hilo.

C. Near Space Technologies Avoid Additional Costs Associated With New Multi-Band Equipment.

As Space Data noted in its Comments, near space technologies establish a wireless site that is close enough to communicate with existing wireless user equipment and handsets developed for use with conventional terrestrial towers, yet is high enough to have clear line of sight to a wide coverage area. Thus, use of a near space network would not require potentially costly new multi-band handsets or subscriber equipment.¹⁴ Public safety and commercial users could enjoy the lower cost of simpler, higher volume single or dual-band handsets.

The mobile device market is highly price sensitive. Specialized, multi-band handsets tend to be manufactured in lower volumes and thus at higher prices. An analysis of retail handset rates in markets where handsets are not subsidized demonstrates the price differentials between multi-band handsets. Specifically, Exhibit E examines the prices of 94 multi-band handsets offered by three major wireless carriers in the United Kingdom for “pay as you go”

¹⁴ See Space Data comments at 5-7.

plans. The average increase in retail price for a handset for each additional spectrum band is \$96.91. Because these rates may reflect the fact that multi-band handsets are more likely to have other features that increase prices, Space Data also examined the difference between the lowest priced handset for each category of multi-band handsets, which shows an average increase per band of \$28.78 per handset. Based on the PSST's financial estimates of 23.6 million subscribers in Year 10, and assuming users keep handsets for two years, adding a spectrum band in the 700 MHz D Block handsets would increase equipment costs by more than \$300 million per year.¹⁵

V. SPACE DATA SUPPORTS OFFERING BIDDING CREDITS TO STIMULATE PARTICIPATION IN THE D BLOCK AUCTION AND PROMOTE CONSTRUCTION OF THE SHARED NETWORK.

Space Data agrees with Sprint Nextel Corporation ("Sprint Nextel") that additional bidding credits would promote greater participation in the re-auction of the 700 MHz D Block spectrum and help create a more financially sound business plan for the Shared Network.¹⁶ Space Data is an active and successful participant in the Commission's Tribal Land Bidding Credit ("TLBC") program. It has discovered first hand that acquiring spectrum requires a sound business plan and that bidding credits can be a deciding factor for investors.¹⁷ The additional bidding incentives suggested by Sprint Nextel would help offset the costs associated with building the Shared Network to meet public safety standards. Space Data further agrees with Sprint Nextel that the Commission has authority to adopt bidding credits in the case of the 700 MHz D Block.

¹⁵ 23.6 million handsets / 2 year life * \$28.78 = \$304 million per year in added handset costs.

¹⁶ See Sprint Nextel Comments at 13-18.

¹⁷ Using TLBCs awarded in Auction Nos. 41, 50 and 51, Space Data provides wireless coverage over its SkySite® network to four tribal lands and more recently received a TLBC for an advanced wireless service license acquired in Auction No. 66.

VI. CONCLUSION.

Public safety and commercial users could significantly benefit by ensuring that innovative and novel technologies can be used to construct and operate the Shared Network. The Commission should ensure that the rules applicable to the 700 MHz D Block spectrum provide maximum flexibility to take advantage of such technologies, including Space Data's near space SkySite platforms, which, when used in conjunction with terrestrial towers, could provide 100 percent broadband coverage to the United States.

Respectfully submitted,

SPACE DATA CORPORATION

/s/ Gerald M. Knoblach

By: Gerald M. Knoblach
Chairman and Chief Executive Officer
460 South Benson Lane
Suite 11-12
Chandler, AZ 85226
Ph: 480-403-0020

July 7, 2008